

Sustainable Development in Perspective.  
Definition, Concepts and Policy Issues

By:

Noraini Jaafar  
Faculty of Chemical and Natural Resources Engineering  
Universiti Teknologi Malaysia,  
Kuala Lumpur

This paper examines the concept of sustainability with special emphasise on the context of sustainable development. The issues involved in defining the implicative meaning of sustainability is explored, and sustainability according to the ecological, economic and social perspectives are discussed. A brief outline of a sustainable development framework and the features of sustainable development is provided. Lastly, the paper presents some of the requirements to achieve sustainable development.

## I. Introduction

The application of the concept of sustainable resource development is self-evident as resources development are directly dependent on environmental resources and essential ecological functioning for "sustainability".

Unchecked resource abuse can affect overall environmental stability. The key is to reduce resource degradation, and therefore disturbances associated with it, to a level where the natural processes and function of the agro-ecosystem can counteract them and thus preserve overall sustainability.

Absolute sustainability may not be physically possible for any particular pattern of industrial development, but one must still find a pattern that is relatively more sustainable than others.

Some of "sustainability criteria" that are applicable to resource development activities include increased recycling, minimal use of nonrenewable resources, exploiting renewable resources at a rate less than their natural rate of 'ecologically safe regeneration', reducing waste-generation levels to well within the assimilative capacity of the environment, and ensuring maximum resource-use efficiency within industrial processes.

The prospect of 100 % recycling of waste residuals is still a technical impossibility, but it is essential to ensure that

the resulting impacts on the environment and its resources are as minimal as possible.

If our goal is a sustainable resource development, then we should seek to identify as clearly as possible not only our notion of what constitutes a sustainable resource development, but also the means necessary to bring a sustainable resource development.

In this paper, the concepts of sustainability with respect to the ecological, social, and economic perspectives are explored.

The concerns over sustainability can be summarized as follows:

1. Resources are being used or degraded at such a rate as to significantly compromise their availability to future generations (e.g. fossil fuels, timber, soils).
2. Humanity's waste are accumulating to such an extent as to also severely compromise future use of the biosphere (e.g. ocean, greenhouse effect).
3. The earth's biological diversity is being reduced at an unacceptable rate, threatening both a significant proportion of nonhuman life and the future use of the biosphere by humans (e.g. tropical forests, genetic diversity in crops).
4. Present societal arrangements and the existing models of growth and development create many goods, services, and situations that are not necessarily socially or humanly desirable (e.g. crowding, stress, overconsumption).
5. Existing model of development are fundamentally inequitable, particularly between what are known as the developed and the developing worlds, but also within nation states.

## II. Implicative meaning of sustainability

The lexical meaning of sustainability is defined by the capability to be maintained. Thus we speak of sustainable development, sustainable agriculture, sustainable ecosystems, sustainable societies, etc.

The second meaning, which is the implicative meaning of sustainability refers to its significance to something. Thus, the implicative meaning of sustainability is strongly dependent upon the context in which it was applied and whether it was based on an ecological, social, or economic

perspective. In other words, in addition to the different meanings of sustainability associated with the contexts in which it is used (e.g. development, agriculture, biodiversity), sustainability could also vary in meaning depending upon the perspective taken within each context (e.g., economic, social, ecological).

To illustrate, economic development can be defined as a process that sets as its goal the improvement of social well-being through the production and acquisition of economic goods and services. If we then introduce the term sustainable economic development, our understanding of economic development changes. We begin to realize a contradiction, because once we acknowledge that a particular style of economic development is unsustainable, we then acknowledge that certain attempts to improve social well-being can ultimately lead to just the opposite.

It stands to reason that the meaning of sustainability would vary according to context and perspectives. Therefore it is the implicative meaning that is of concern here since each context or perspective will be composed of different conditions and thus different implications.

In this paper three general perspectives of sustainability are identified:

- (a) ecological
- (b) economic, and
- (c) social

#### a. Ecological perspective

The underlying assumption within ecologically sustainable development is that sustainability is desirable, that it is something we ought to pursue.

Ecological perspective is concerned with those processes that make development possible (i.e. life support, energetics, material cycling, primary and secondary productivity, etc.).

Sustainability from an ecological perspectives is thus defined as representing "the continued productivity and functioning of ecosystems". Accordingly, the ecological perspectives represents a scientifically oriented outlook that seeks to sustain the conditions that make development possible.

#### b. Economic Perspective

From an economic perspective, sustainability is the ability of a system to maintain its productivity when subjected to stress or shock. Main stream economists have more or less ignored the relationship between the environment and

development. The economic perspective within ecologically sustainable development seeks to remedy this oversight by acknowledging that environmental concerns are pertinent for economics.

Sen (1984) has argued that economic growth, in and of itself, is insufficient for the purposes of development. If we want to raise people's standard of living, then we must concentrate on enhancing their capabilities the goods and services they need in order to live well. Thus economic growth should be of the sustainable growth mode and not result in the depletion of capital or environmental assets. Sustainable resource development can thus be interpreted as the process that seeks to make manifest a higher standard of living for human being, and that it recognizes this cannot be achieved at the expense of environmental integrity.

If seeking to live well is fundamentally important to us not only throughout our lives but throughout the lives of future generations, then engaging in a mode of development that is ecologically sustainable is called for.

#### c. Social Perspective

According to B. Brown and others (1987), a social definition of sustainability represents "the continued satisfaction of basic human needs - food, water, shelter - as well as higher-level social and cultural necessities such as security, freedom, education, employment, and recreation".

Conservation and development were once thought to be necessarily conflicting activities. The prominent thrust of the social perspective is to prove that conservation and development need not be in perpetual conflict, but can be coexistent.

In all the three perspectives described above, the distinguishing characteristic is the ability to be continued.

### III. Conceptual Outline of Ecologically Sustainable Development.

Now let us look at the context of sustainable resource development and define the conceptual framework surrounding sustainability so that we might achieve a greater understanding of the issues involved. Figure 1 shows the conceptual outlook of sustainable resource development.



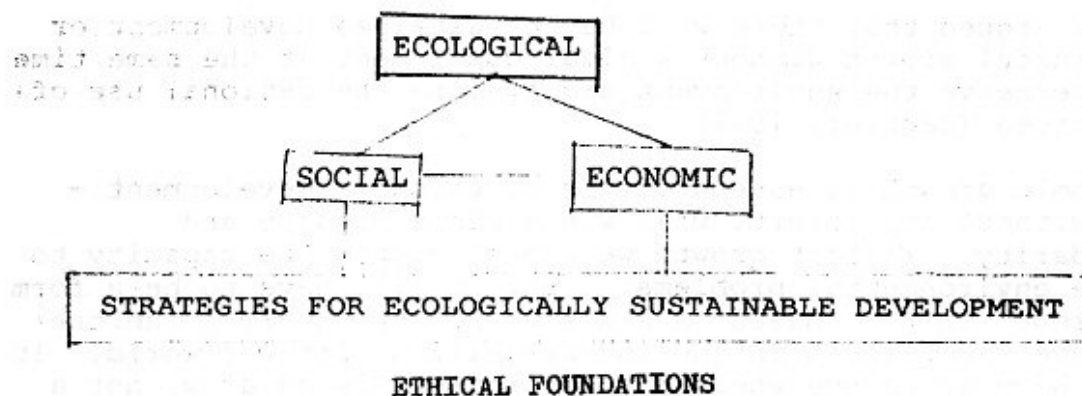


Figure 1.  
Relationship of perspectives addressing ecologically sustainable development.

Note that the ethical perspectives is included that encompasses the others. The ethical perspectives should not be considered separate or distinct. The underlying assumption within ecologically sustainable development is that sustainability is desirable, that it is something we ought to pursue. Each perspective thus is developed from the standpoint that ecological sustainability is "good" to which means should be directed.

As indicated in Figure 1, the ecological perspective is distinguished from the others. This is necessary because the ecological perspective is concerned with those processes that make development possible (i.e. life supports, energetics, material cycling, primary and secondary productivity, etc). The other two perspectives, on the other hand, can be drawn upon the ecological perspectives for guidance as they attempt to develop strategies necessary to meet the requirements of ecologically sustainable development.

#### IV. Concepts of Sustainable Development.

Sustainable development according to the World Commission is defined as meeting the needs and aspirations of the present generation without compromising the ability of future generations to meet their needs. It is a form of progress for social and economic development that enhances the resource-base rather than degrades it.

Eckholm (1979), Fortmann and Bruce (1988), and Korten (1986) have associated successful conservation with secure control over land and natural resources. Others have stated the importance of grassroots participation in achieving conservation.

It is argued that there will be no sustained development or meaningful growth without a clear commitment at the same time to preserve the environment and promote the rational use of resources (Barbier, 1987).

Economic growth is essential for sustainable development - for without it, poverty will win against dignity and solidarity. Without growth we cannot create the capacity to solve environmental problems. But it will have to be a form of growth that is based on a different content from the one we have experienced in the industrialized post-war world. It will have to be one where the environment is an ally, not a victim. The soaring growth-rates of the sixties were achieved at the expense of the environment and favourable conditions for human health.

Future growth which is consistent with sustainable development must be more energy-efficient and more material-efficient.

The World Commission on Environment and Development (1987) identified the requirements for integration of development with conservation as follows:

- A political system that secures effective citizen participation in decision making
- An economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis
- A social system that provides for solutions for the tensions arising from disharmonious development
- A production system that respects the obligation to preserve the ecological base for development
- A technological system that can search continuously for new solutions
- An international system that fosters sustainable pattern of trade and finance
- An administrative system that is flexible and has the capacity for self correction.

## **V. Conclusion**

The conceptual framework of sustainable resource development allows issues in sustainability to be addressed accordingly. It allows us to understand and appreciate what would be involved in cultivating and initiating appropriate environmental planning and policy to pursue the mode of sustainable development.